

**REMARKS**

By these claim amendments, Applicants have cancelled Claims 1, 22 and 27-30. Applicants have amended Claims 2, 3, 7, 14, 16, 17, 19, 20 and 21. Applicants have added new Claims 31-40.

Applicants assert four new independent claims in replacement of Claims 1 and 22. Claim 31 recites a semiconductor laser device in which an optical field generated in an optically active region has a nonuniform intensity which varies as a function of the position within the active region. Means are coupled to this active region for injecting carriers into the optically active region in a nonuniform spatial distribution.

New submitted independent Claim 34 recites an optically active region in which light is generated in a predetermined optical field having nonuniform intensity which varies as a function of position within the active region, such that there is at least one first subregion that has a first light intensity and at least a second subregion having a second light intensity which is less than the first. The claimed structure further includes a shaped carrier injection contact with a surface contact area. More of this contact area is formed adjacent the first subregion, and less of it is formed adjacent the second subregion.

Newly submitted Claim 36 recites, inter alia, a carrier injection means which selectively amplifies a fundamental mode of an optical field generated in an optically active region.

Finally, independent Claim 40 recites a semiconductor laser device in which a wide optical waveguide is formed around an axis of symmetry. An active region of the waveguide generates an optical field in a fundamental mode having a maximum on this axis and a Gaussian

optical field distribution. A shaped carrier injection contact has a geometric distribution of its surface contact area concentrated near its axis and approximating the optical field distribution.

Support for these claims can be found as expressed in the specification originally filed or as implicit in the drawings filed with it. A predetermined optical field having a nonuniform intensity is illustrated in FIGs. 1, 3 and 6, the particular distribution illustrated being Gaussian. This Gaussian distribution is also described at e.g., page 11, lines 12-16. An injection carrier means having a nonuniform spatial distribution is shown in the contact shapes of FIGs. 1A and 1B and FIG. 6. FIG. 6 also shows the axis around which the WOW semiconductor laser device is formed, and in particular how the shaped contact is formed around this axis and how the Gaussian distribution of the optical field peaks on the axis. This axial or bilaterally symmetric arrangement is also shown in FIG. 1A, FIG. 1B and FIG. 3.

A central concept of the invention is the matching or approximation of the density of carrier injection to the intensity of the optical field in the adjacent optically active region. This concept is described, for example, at page 6, lines 14-17, page 11, lines 12-15, and page 12, lines 20-24. This matching or gain profiling concept is recited in alternative ways by Claims 32 and 34.

Claims 33 and 35 add optically passive regions having increased bandgaps formed by Quantum Well intermixing. This language is supported, for example, at page 6, lines 1 and 7, and page 16, lines 9-13.

Claim 36 is supported in particular by language at page 11, lines 16-20. The spatial mode filter recited in Claim 38 can find support at page 6, lines 25-26, page 9, lines 10-23, and Claim 20 as initially submitted.

The wide optical waveguide (WOW) of Claim 40 is supported e.g. at page 10, lines 6-8 and lines 13-22. The Gaussian distribution of the fundamental mode of the optical field is disclosed e.g. at page 11, lines 26-27. The shaped carrier injection contact is described at, e.g., page 11, lines 21-25, page 12, lines 16-29, page 13, lines 1-2 and page 16, lines 20-23.

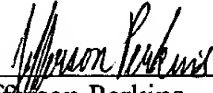
In his Action, the Examiner rejected the claims as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner asserted that the recitation of “at least one portion which has been Quantum Well intermixed” in Claim 1 was indefinite, and that the critical required elements of the laser device were not set forth in the claims. The Examiner recited these elements as an active medium, a resonating cavity and pumping means.

Applicants believe that the claims as now submitted overcome these indefiniteness rejections. Each independent claim now includes an optical waveguide, an optically active region of the optical waveguide, and some kind of carrier injection means or contact. The Quantum Well intermixing limitation has been carried forward in Claims 33 and 35, but only in conjunction as a characteristic of recited optically passive regions.

All of the objections and rejections of the Examiner having been overcome, Applicants respectfully request the Examiner to issue a Notice of Allowance on the claims as amended.

A check in the amount of \$84.00 to cover the fee associated with this Reply is enclosed herewith. The Assistant Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 18-2284 of Piper Rudnick, duplicate copy attached.

Respectfully submitted,

  
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